

Space Weather Forecast

Issued on Saturday, 19 November 2022 at 01:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of G1/Minor Storms, mainly day 2 (20th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low levels, with only common class flares observed. These are primarily from complex sunspot regions which have rotated across the western limb, but also from a recently developed sunspot region which rapidly emerged on the northwest quadrant. Significant growth of this region appears to have recently stalled, although there is some spreading evident in its observable spots. There are a further three small and benign sunspot regions, two on the southeast disc and one on the northeast disc. No Earth-directed CMEs (coronal mass ejections) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind speed has been predominantly slow during last 24 hours, despite the effects of what was potentially a glancing blow from a weak and slow moving CME. The total magnetic field strength was initially weak but became mainly moderate from 18/1630 UTC. The north-south component was mainly negative (southward) pointing, but generally weak except for a brief period of Moderate strength around 18/1720 UTC. Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low, with further common class flares likely and a slight chance of Moderate class flares. The main risk is from developing sunspot AR3150 in the northwest.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Initially background winds are expected to become enhanced due to the arrival of fast winds from a large coronal hole in the southern solar disc. Confidence is low on the timing of the arrival however, with fast winds possible from late day 1 (19th), perhaps peaking early 22nd (day 3), before gradually receding later in the period. Quiet, isolated Unsettled, geomagnetic activity at first becoming Unsettled to Active later day 1 (19th), with a chance of G1/Minor Storm intervals, most likely day 2 (20th), but potentially also late day 1 (19th) or day 3 (21st). Activity easing to Quiet to Unsettled with a chance of Active intervals by day 4 (22nd).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is expected to persist at background levels.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	30	40	20	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	20	15	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)